

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 1 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

ON THE TITLE PAGE, ITEM

(57), under "ABSTRACT", in Column 2, Lines 1-11, delete "A birdcage coil..... rings interconnecting them." and insert -- A coil for use with a magnetic resonance (MR) system includes a pair of electrically conductive rings and a plurality of rods. The rings are disposed at an opposite ends of the coil from one other, and the rods electrically interconnect the rings to form a birdcage-like structure therewith. The rods and rings are configured to produce about the birdcage-like structure a plurality of partially-overlapped primary resonant substructures, with each primary resonant substructure including two rods and a corresponding section of each of the rings interconnecting them. In this configuration, each primary resonant substructure (i) partially overlaps each of its neighboring primary resonant substructures and electrically shares therewith a region of overlap created thereby and (ii) is capable of receiving MR signals from tissue within its field of view thus enabling each primary resonant substructure to convey the MR signals received thereby via a separate port to the MR system. --, therefor.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 2 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE SPECIFICATION**

Columns 6 & 7, Lines 43-67 & 1-2, delete "In a presently preferred embodiment,..... the region of interest." and insert -- In a presently preferred embodiment, the invention provides a head coil for use with a magnetic resonance (MR) system capable of acquiring images of a region of interest using parallel imaging techniques. The head coil includes a first ring at an inferior end of the head coil, a second ring at a superior end of the head coil, and a plurality of rods electrically interconnecting the first and second rings to form a birdcage-like structure therewith. The first ring is electrically conductive and has a first diameter through which the region of interest is provided access to the head coil. The second ring is electrically conductive and has a second diameter smaller than the first diameter of the first ring. Each rod has a linear portion and a tapered portion with the linear portion being connected to the first ring and the tapered portion being connected to the second ring. The tapered portions of the rods collectively provide the head coil with a substantially homogeneous pattern of magnetic flux density in at least one of three orthogonal imaging planes of the head coil while maintaining and/or improving the signal-to-noise ratio of the head coil. The rods and rings of the head coil are configured to produce about the birdcage-like structure a plurality of partially-overlapped primary resonant substructures, with each primary resonant substructure including two rods and a corresponding section of each of the rings interconnecting them. In this configuration, each primary resonant substructure (i) partially overlaps each of its neighboring primary resonant substructures and electrically shares therewith a region of overlap created thereby and (ii) is capable of receiving magnetic resonance signals from a portion of the region of interest within its field of view thus enabling each primary resonant substructure to convey the magnetic resonance signals received thereby via a separate port to the MR system. In a broader aspect, the invention provides a coil for use with a magnetic resonance (MR) system. The coil includes a first ring a one end of the coil, a second ring at the other end of the coil, and a plurality of rods electrically interconnecting the rings to form a birdcage-like structure therewith. The first ring is electrically conductive and has a first diameter, and the second ring is electrically conductive and has a second diameter. The rods and rings of the coil are configured to produce about the birdcage-like structure a plurality of partially-overlapped primary resonant substructures, with each primary resonant substructure including two rods and a corresponding section of each of the rings interconnecting them. In this configuration, each primary resonant substructure (i) partially overlaps each of its neighboring primary resonant substructures and electrically shares therewith a region of overlap created thereby and (ii) is capable of receiving magnetic resonance signals from tissue within its field of view thus enabling each primary resonant substructure to convey the magnetic resonance signals received thereby via a separate port to the MR system. --, therefor.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 3 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE SPECIFICATION (Cont'd)

Column 7, Lines 3-20, delete "In a related aspect, invention..... region of interest." and insert -- In an even broader aspect; the invention provides a coil for use with a magnetic resonance (MR) system. The coil includes a pair of electrically conductive rings and a plurality of rods. The rings are disposed approximately at an opposite ends of the coil from one other, and the rods electrically interconnect the rings to form a birdcage-like structure therewith. The rods and rings of the coil are configured to produce about the birdcage-like structure a plurality of partially-overlapped primary resonant substructures, with each primary resonant substructure including two rods and a corresponding section of each of the rings interconnecting them. In this configuration, each primary resonant substructure (i) partially overlaps each of its neighboring primary resonant substructures and electrically shares therewith a region of overlap created thereby and (ii) is capable of receiving magnetic resonance signals from tissue within its field of view thus enabling each primary resonant substructure to convey the magnetic resonance signals received thereby via a separate port to the MR system. --, therefor.

Column 7, Lines 21-37, delete "In a broader aspect,..... the region of interest." and insert -- In another aspect, the invention provides a coil for use with a magnetic resonance (MR) system. The coil includes a first electrically conductive end member, a second electrically conductive end member, and a plurality of rods electrically interconnecting the first and second end members to form a unitary structure therewith. The first end member is disposed approximate one end of the coil, and the second end member is disposed approximate the other end of the coil. The rods and end members are configured to produce about the unitary structure a plurality of partially-overlapped primary resonant substructures, with each primary resonant substructure including two rods and a corresponding section of each of the end members interconnecting them. In this configuration, each primary resonant substructure (i) partially overlaps its neighboring primary resonant substructure(s) and electrically shares therewith a region of overlap created thereby and (ii) is capable of receiving magnetic resonance signals from tissue within its field of view thus enabling each of the primary resonant substructures to convey the magnetic resonance signals received thereby to the MR system. --, therefor.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 4 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE SPECIFICATION (Cont'd)**

Column 7, Lines 38-49, delete "In an even broader aspect, invention.....rings interconnecting them." and insert -- In a related aspect, the invention also provides a neurovascular array for use with a magnetic resonance (MR) system. The neurovascular array includes a head coil, an anterior neck coil, and a posterior cervical spine coil. The head coil includes a first ring approximate one end of the head coil, a second ring approximate the other end of the head coil, and a plurality of rods. The first ring is electrically conductive and has a first diameter, and the second ring is electrically conductive and has a second diameter. The rods electrically interconnect the first and second rings to form a birdcage-like structure therewith. The rods and rings of the head coil are configured to produce about the birdcage-like structure a plurality of partially-overlapped primary resonant substructures, with each primary resonant substructure constituting a coil element having two of the rods and a corresponding section of each of the first and second rings interconnecting them. In this configuration, each coil element of the head coil (i) partially overlaps each of its neighboring coil elements and electrically shares therewith a region of overlap created thereby and (ii) is capable of receiving magnetic resonance signals from tissue within its field of view. The anterior neck coil includes one or more of its own type of coil element as does the posterior cervical spine coil, --, therefor.

Column 9, Line 25, delete "transnPreceive" and insert -- transmit/receive --, therefor.

Column 10, Line 48, delete "CM," and insert --  $C_m$  , --, therefor.

Column 15, Line 5, delete "CM" and insert --  $C_m$  --, therefor.

Column 15, Line 10, delete "Signa" and insert -- Signa® --, therefor.

Column 16, Line 57, in Claim 1, after "second rings" insert -- of the head coil --.

Column 16, Line 64, in Claim 1, after "substructures" insert -- (i) --.

Column 16, Line 65, in Claim 1, after "substructures and" insert -- electrically shares therewith a region of overlap created thereby and (ii) --.

Column 16, Line 67, in Claim 1, after "field of view" insert -- thus enabling each of said primary resonant substructures to convey the magnetic resonance signals received thereby via a separate port to the MR system --.

Column 18, Line 4, in Claim 19, after "second rings" insert -- of the coil --.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 5 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE SPECIFICATION (Cont'd)**

Column 18, Line 5, in Claim 19, after "produce" insert -- about the birdcage-like structure --.

Column 18, Lines 6-7, in Claim 19, after "substructures" delete "about the birdcage-like structure".

Column 18, Line 11, in Claim 19, after "substructures" insert -- (i) --.

Column 18, Line 12, in Claim 19, after "substructures and" insert -- electrically shares therewith a region of overlap created thereby and (ii) --.

Column 18, Line 14, in Claim 19, after "field of view" insert -- thus enabling each of said primary resonant substructures to convey the magnetic resonance signals received thereby via a separate port to the MR system --.

Column 19, Line 38, in Claim 42, after "said rings" insert -- of the coil --.

**IN THE CLAIMS**

Column 16, Line 57, in Claim 1, after "second rings" insert -- of the head coil --.

Column 16, Line 64, in Claim 1, after "substructures" insert -- (i) --.

Column 16, Line 65, in Claim 1, after "substructures and" insert -- electrically shares therewith a region of overlap created thereby and (ii) --.

Column 16, Line 67, in Claim 1, after "field of view" insert -- thus enabling each of said primary resonant substructures to convey the magnetic resonance signals received thereby via a separate port to the MR system --.

Column 18, Line 4, in Claim 19, after "second rings" insert -- of the coil --.

Column 18, Line 5, in Claim 19, after "produce" insert -- about the birdcage-like structure --.

Column 18, Lines 6-7, in Claim 19, after "substructures" delete "about the birdcage-like structure".

Column 18, Line 11, in Claim 19, after "substructures" insert -- (i) --.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 6 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE CLAIMS**

Column 18, Line 12, in Claim 19, after "substructures and" insert -- electrically shares therewith a region of overlap created thereby and (ii) --.

Column 18, Line 14, in Claim 19, after "field of view" insert -- thus enabling each of said primary resonant substructures to convey the magnetic resonance signals received thereby via a separate port to the MR system --.

Column 19, Line 38, in Claim 42, after "said rings" insert -- of the coil --.

Column 19, Line 38, in Claim 42, after "produce" insert -- about the birdcage-like structure --.

Column 19, Line 40, in Claim 42, after "substructures" delete "about the birdcage-like structure".

Column 19, Line 44, in Claim 42, after "substructures" insert -- (i) --.

Column 19, Line 45, in Claim 42, after "substructures and" insert -- electrically shares therewith a region of overlap created thereby and (ii) --.

Column 19, Line 47, in Claim 42, after "field of view" insert -- thus enabling each of said primary resonant substructures to convey the magnetic resonance signals received thereby via a separate port to the MR system --.

Column 20, Line 27, in Claim 56, delete "52" and insert -- 42 --, therefor.

Column 20, Line 30, in Claim 57, delete "52" and insert -- 42 --, therefor.

Column 21, Line 5, in Claim 65, after "end members" insert -- to form a unitary structure therewith --.

Column 21, Line 7, in Claim 65, after "to yield" insert -- about the unitary structure --.

Column 21, Line 13, in Claim 65, insert -- (i) --, before "partially".

Column 21, Line 13, in Claim 65, after "overlaps" delete "at least one of".

Column 21, Line 14, in Claim 65, delete "substructures and" and insert -- substructure (s) and electrically shares therewith a region of overlap created thereby and (ii) --, therefor.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,084,629 B2  
APPLICATION NO. : 10/723428  
DATED : August 1, 2006  
INVENTOR(S) : Monski, Jr. et al.

Page 7 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE CLAIMS (cont'd)

Column 21, Line 16, in Claim 65, after "field of view" insert -- thus enabling each of said primary resonant substructures to convey the magnetic resonance signals received thereby to the MR system --.

Column 22, Line 24, in Claim 74, after "second rings" insert -- of the head coil --.

Column 22, Line 25, in Claim 74, after "produce" insert -- about the birdcage-like structure --.

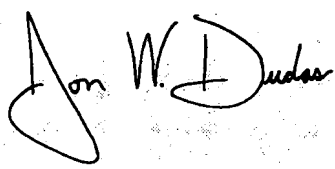
Column 22, Lines 26-27, in Claim 74, after "substructures" delete "about the birdcage-like structure".

Column 22, Line 31, in Claim 74, after "elements" insert -- (i) --.

Column 22, Line 32, in Claim 74, after "coil elements and" insert -- electrically shares therewith a region of overlap created thereby and (ii) --.

Signed and Sealed this

Twenty-seventh Day of November, 2007

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a distinct "D".

JON W. DUDAS

*Director of the United States Patent and Trademark Office*